

CLAIMS

5 What is claimed is:

1. A method of tracking phase error of OFDM pilots in an OFDM frame comprising:

adjusting a width of a closed loop tracking bandwidth of a pilot phase tracking loop while receiving OFDM data symbols to minimize

10 frequency errors resulting from frequency pushing and frequency pulling in an OFDM transceiver.

2. The method of Claim 1 wherein the adjusting comprises operating the pilot tracking loop at a first closed loop tracking bandwidth that
15 is wider than a nominal closed loop tracking bandwidth when tracking one or more OFDM data symbols at the beginning of a data portion of an OFDM MAC frame.

3. The method of Claim 2 wherein the adjusting further
20 comprises reducing the closed loop tracking bandwidth of the pilot tracking loop from the first closed loop tracking bandwidth to the nominal closed loop tracking bandwidth when tracking OFDM data symbols subsequent to the one or more OFDM data symbols.

25 4. The method of Claim 1 wherein the frequency error between receive and transmit operations in the OFDM transceiver is maintained at less than about 100 Hz.

30 5. The method of Claim 1 wherein the frequency error between receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using 64-QAM and higher modulations.

6. The method of Claim 1 wherein the frequency error between receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using QPSK and higher modulations.

7. An OFDM pilot tracking system comprising:
means for adjusting a width of a closed loop tracking bandwidth of a pilot phase tracking loop while receiving OFDM data symbols to minimize frequency errors resulting from frequency pushing and frequency pulling in an OFDM transceiver.

8. The system of Claim 7 wherein the means for adjusting comprises means for operating the pilot tracking loop at a first closed loop tracking bandwidth that is wider than a nominal closed loop tracking bandwidth when tracking one or more OFDM data symbols at the beginning of a data portion of an OFDM MAC frame.

9. The system of Claim 7 wherein the means for adjusting further comprises means for reducing the closed loop tracking bandwidth of the pilot tracking loop from the first closed loop tracking bandwidth to the nominal closed loop tracking bandwidth when tracking OFDM data symbols subsequent to the one or more OFDM data symbols.

10. The system of Claim 7 wherein the frequency error between receive and transmit operations in the OFDM transceiver is maintained at less than about 100 Hz.

11. The system of Claim 7 wherein the frequency error between receive and transmit operations in the OFDM transceiver is minimized in

order to support OFDM communications using 64-QAM and higher modulations.

12. The system of Claim 7 wherein the frequency error between
5 receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using QPSK and higher modulations.

13. A method of reducing the effect of frequency pushing and
10 frequency pulling in an OFDM tracking loop comprising:

operating a pilot tracking loop at a first closed loop tracking bandwidth that is wider than a nominal closed loop tracking bandwidth when tracking one or more OFDM data symbols at the beginning of a data portion of an OFDM MAC frame, wherein the first closed loop tracking
15 bandwidth is used to track out frequency errors due to frequency pushing and frequency pulling in an OFDM transceiver; and

reducing the closed loop tracking bandwidth of the pilot tracking loop from the first closed loop tracking bandwidth to the nominal closed loop tracking bandwidth when tracking OFDM data symbols
20 subsequent to the one or more OFDM data symbols.

14. The method of Claim 13 wherein the frequency error between receive and transmit operations in the OFDM transceiver is maintained at less than about 100 Hz.

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15. The method of Claim 13 wherein the frequency error between receive and transmit operations in an OFDM transceiver is minimized in order to support OFDM communications using 64-QAM and higher modulations.

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16. The system of Claim 13 wherein the frequency error between receive and transmit operations in the OFDM transceiver is minimized in order to support OFDM communications using QPSK and higher modulations.

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FIG. 2B is a block diagram of a system 200 in accordance with one embodiment of the present invention. The system 200 includes a processor 210, a memory 220, and a transceiver 230. The processor 210 is connected to the memory 220 and the transceiver 230. The processor 210 is configured to execute instructions stored in the memory 220 to control the transceiver 230. The transceiver 230 is configured to communicate with an external device 240. The external device 240 is connected to the transceiver 230. The system 200 is configured to perform the operations described in the claims.